FACT SHEET FOR STATE WASTE DISCHARGE PERMIT NO. ST 5037

MORTON INTERNATIONAL INCORPORATED

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INTRODUCTION

This fact sheet is a companion document to the draft State Waste Discharge Permit No. ST 5037. The Department of Ecology (the Department) is proposing to issue this permit, which will allow discharge of wastewater to the City of Elma Wastewater Treatment Plant. This fact sheet explains the nature of the proposed discharge, the Department's decisions on limiting the pollutants in the wastewater, and the regulatory and technical bases for those decisions.

Washington State law (RCW 90.48.080 and 90.48.160) requires that a permit be issued before discharge of wastewater to waters of the state is allowed. This statute includes commercial or industrial discharges to sewerage systems operated by municipalities or public entities that discharge into public waters of the state. Regulations adopted by the state include procedures for issuing permits and establish requirements which are to be included in the permit (Chapter 173-216 WAC).

This fact sheet and draft permit are available for review by interested persons as described in Appendix A—Public Involvement Information.

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in these reviews have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Changes to the permit will be addressed in Appendix D—Response to Comments.

GENERAL INFORMATION	
Applicant:	Rohm and Haas Company
Facility Name and Address:	Elma Plant: 4800 State Route 12, Elma, WA 98541
Type of Facility:	Inorganic Chemical Manufacturing
Facility Discharge Location:	To Sewer: Latitude: 46° 59' 42" N Longitude: 123° 23' 00" W
Treatment Plant Receiving Discharge:	Elma Wastewater Treatment Plant
Contact at Facility:	Name: Fred Moore Telephone #: (360) 482-8806
Responsible Official:	Name: Kathleen M. Schultz-Rodriguez Title: Plant Manager Address: 4800 State Route 12, P.O. Box 1224, Elma WA 98541-1224 Telephone #: (360) 482-8811 FAX # (360) 482-8811

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

Rohm and Haas owns and operates an inorganic chemical processing facility in Elma, Washington. The facility manufactures boron compounds that are used by the paper making, pharmaceuticals and chemical industries. The facility has a single outfall to the Elma sanitary sewer system for discharges of process wastewater, contaminated stormwater, and sanitary wastewater. Morton International is not a Significant Industrial User since its permitted average flow does not exceed 25,000 gpd or 5 percent of the POTW hydraulic design capacity (24,000 gpd).

HISTORY

This facility was formerly owned by Morton International and before that was owned by Morton Thiokol. This facility began operations in April 1976, making sodium borohydride. A major addition to this plant was added in 1995-1997 to make dry sodium borohydride. Increased production has not led to a significant increase in the wastewater stream since the new process is by the definition of the process a dry (non-discharging) procedure. Rohm and Haas has a well-run production facility with an excellent record of compliance with its permits.

INDUSTRIAL PROCESSES

The Elma plant of Rohm and Haas produces wet and dry products of sodium borohydride, potassium borohydride. Trimethylborate pure and trimethylborate azeo are both produced and marketed here. Sodium hydroxide is also produced as a by-product. Raw materials used in sodium borohydride production include sodium, a source of boron (typically boric acid or anhydrous boric acid), and hydrogen produced from steam and natural gas. Rohm and Haas uses potassium hydroxide as a raw material in addition to the raw materials listed above. Non-consumptive use is made of mineral oil and methanol in the process, but these materials are mostly recovered and reused. The sodium borohydride production facility in Elma, Washington, is subdivided into two processes: sodium borohydride manufacturing (SBH or LSBH) and dry sodium borohydride production (DSBH). An on-site laboratory serves as quality control for both processes.

This is a renewal of an existing permit for a facility that has been permitted since it began operating in 1976.

The only seasonal variation at this plant is the variability of stormwater runoff with the seasons.

The facility operates two shifts of 12 hours, 7 days a week, employing 9 operators and 1 supervisor per shift.

The following chemicals are stored at the plant: lubricating oil, sulfuric acid, IPA, acetone, fuel oil #2, lithium chloride, various water treatment chemicals and catalysts, diatomaceous earth, janitorial supplies, mineral oil, methanol, sulfuric acid, magnesium carbonate, paints, greases, carbon dioxide, Cabosil, miscellaneous laboratory reagents, HTO, and nitrogen.

Best management practices employed are careful regulation, compliant storage of chemicals and recycling of methanol and mineral oil used in the process with the exception of dryer condensate, all process wastewater is recycled.

Only the wet process generates significant quantities of process wastewater. This process proceeds as follows: In one process area, boric acid and methanol are reacted to form an intermediate trimethylborate [$B(OCH3)_3$], TMB. In a second process area, sodium and hydrogen from natural gas are reacted in a process oil medium to form another intermediate, sodium hydride (NaH). These two intermediates are then reacted in a third process area to form sodium borohydride ($NaBH_4$). In the fourth process area, the $NaBH_4$ is separated from the process oil and water and the resulting solution is purified. The resulting material is a water-based solution of $NaBH_4$ (12 percent) and caustic (40 percent), which is shipped by tank truck and rail car.

TREATMENT PROCESSES

The wastewater was formerly pretreated by a two-staged vapor recompression evaporator. By a permit modification issued on November 27, 2002, the use of this evaporator was no longer required. The previous permit for this facility was issued on April 19, 2000, and modified on November 27, 2002. An application for permit renewal was submitted to the Department on April 1, 2004.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility last received an inspection on January 14, 2003.

During the period of the existing permit, Rohm and Haas has shown good general compliance with the permit, based on discharge monitoring reports (DMRs) and other submittals furnished to the Department and compliance inspections conducted by the Department. There were some instances of late DMR submittals in 2003, but no permit substance violations occurred.

Rohm and Haas' response to all exceedances of the permit limits has been to take immediate action to correct all problems. No upsets of the treatment process have been reported by the Elma POTW.

PERMIT STATUS

The previous permit for this facility was issued on April 19, 2000 and modified on November 27, 2002.

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the permit application and in discharge monitoring reports. The proposed wastewater discharge is characterized for the following parameters for the period January1, 2003 through January 1, 2004.

WASTE CHARACTERIZATION

Parameter	Unit	Average	Maximum
Flow	gpd	14045	41322
Boron,	mg/l	8.7	39
COD,	mg/l	334	695
BOD,	mg/l	122	486
TSS	mg/l	82	310
Oil & Grease,	mg/l	6.7	14

PROPOSED PERMIT LIMITATIONS

State regulations require that limitations set forth in a waste discharge permit must be based on the technology available to treat the pollutants (technology-based) or be based on the effects of the pollutants to the POTW (local limits). Wastewater must be treated using all known, available, and reasonable treatment (AKART) and not interfere with the operation of the POTW.

The minimum requirements to demonstrate compliance with the AKART standard and specific design criteria for this facility were determined for the previous permit.

The more stringent of the local limits-based or technology-based limits are applied to each of the parameters of concern. Each of these types of limits is described in more detail below.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Technology-based limits for wastewater discharge are determined in various ways. For an industry where no limits have determined by research and codified by the EPA, several approaches are possible. Sometimes the receiving POTW has a city ordinance limiting discharge, but Elma does not have such limitations. The limits for this permit has been determined as follows:

Flow: The flow for this discharge is a mixture of process water and rainwater during storms. Using the performance of the plant during the period January 1, 2003 through January 1, 2004 and the standard method of calculation from the Ecology Permit Writers Manual, a thirty day average limit and daily maximum limit were derived. Calculation for this flow limit is as shown in Appendix C. Morton International has an agreement with the Elma POTW to reserve a capacity of 70,000 gpd based on average flow.

Boron: Boron is measured for this permit because it is the principal ingredient of the product of this plant. While boron is relatively non-toxic, it can cause physical effects in

laboratory animals in very large doses. It has not been shown to cause POTW interferences, pass through problems, or sludge contamination. Boron limits were taken out of the permit in a modification dated November 27, 2002.

COD: COD average and mass loadings are an indication of the small amount of methanol escaping from the recovery process and mostly isopropylamine in the dryer condensate. Using the performance of the plant during the period January 1, 2003 through January 1, 2004 and the standard method of calculation from the Ecology Permit Writers Manual, a thirty day average limit and daily maximum limit were derived. Calculation for this flow limit is as shown in Appendix C.

BOD: BOD maximum daily mass and BOD monthly average concentration are a measure of the biochemical oxygen demand that this facility transfers to the Elma wastewater treatment facility. Given the constant correlation between COD and BOD for this plant, BOD testing and limits are removed from this permit.

TSS: Total Suspended Solids is a measure of the mass of suspended solids that this facility transfers to the Elma wastewater treatment facility. Using the performance of the plant during the period January 1, 2003 through January 1, 2004 and the standard method of calculation from the Ecology Permit Writers Manual, a thirty day average limit and daily maximum limit were derived. Calculation for this flow limit is as shown in Appendix C.

Oil and Grease: Oil and Grease is a measure of the concentration of oil and grease that this facility transfers to the Elma wastewater treatment facility. Using the performance of the plant during the period January 1, 2003 through January 1, 2004 and the standard method of calculation from the Ecology Permit Writers Manual, a thirty day average limit and daily maximum limit were derived. Calculation for this flow limit is as shown in Appendix C.

pH: pH is a measure of the relative acid/base content of the wastewater. The 6 to 9 limit is common for all discharges to POTWs.

All waste discharge permits issued by the Department must specify conditions requiring available and reasonable methods of prevention, control, and treatment of discharges to waters of the state (WAC 173-216-110). The following permit limitations are necessary to satisfy the requirement for AKART:

TABLE 1
EFFLUENT LIMITATIONS

	LIMITS	
Parameters	Monthly Average	Daily Maximum
Flow (GPD)	17,900	40,700
COD, lbs/day	100	160
TSS, lbs/day	27	48
Oil and Grease,	24	58

mg/L		
pH	6 to 9 S.U. No exceedance lasting less than 15 minutes need be reported.	

EFFLUENT LIMITATIONS BASED ON LOCAL LIMITS

There are no applicable local limits.

COMPARISON OF LIMITATIONS WITH THE EXISTING PERMIT MODIFICATION ISSUED NOVEMBER 27, 2002.

TABLE 2
LIMIT COMPARISON
EXISTING VS. PROPOSED

MASS LOADINGS						**CONCENTRATIONS**				
Parameter	Mass Unit	Monthly Average Existing	Monthly Average Proposed	Daily Maximum Existing	Daily Maximum Proposed	Concentration Unit	Monthly Average Existing	Monthly Average Proposed	Daily Maximum Existing	Daily Maximum Proposed
Flow	GPD	32,000	17,900	44,000	40,800	N/A	N/A	N/A	N/A	N/A
COD	lbs/day	400	101	400	162	mg/L	N/A	N/A	N/A	N/A
BOD_5	lbs/day	N/A	39	300	69	mg/L	N/A	N/A	N/A	N/A
TSS	lbs/day	N/A	27	31	48	mg/L	N/A	N/A	N/A	N/A
Oil & Grease	lbs/day	N/A	N/A	N/A	N/A	mg/L	53	24	53	58
pH	Range, S.U.	6 to 9	6 to 9	6 to 9	6 to 9	6 to 9	6 to 9	6 to 9	6 to 9	6 to 9

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are specified to verify that the treatment process is functioning correctly and that effluent limitations are being achieved (WAC 173-216-110).

All samples are taken at the lift station at the downstream limit of the plant sewers. This facility has a flowmeter, a 24-hour composite sampler, and a recording pH meter. See Attachment F1.

The monitoring schedule is detailed in the proposed permit under Condition S2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3 are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges [WAC 273-216-110 and 40 CFR 403.12 (e), (g), and (h)].

OPERATIONS AND MAINTENANCE

The proposed permit contains condition S.5. as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

PROHIBITED DISCHARGES

Certain pollutants are prohibited from being discharged to the POTW. These include substances which cause pass-through or interference, pollutants which may cause damage to the POTW or harm to the POTW workers (Chapter 173-216 WAC), and the discharge of designated dangerous wastes not authorized by this permit (Chapter 173-303 WAC).

DILUTION PROHIBITED

The Permittee is prohibited from diluting its effluent as a partial or complete substitute for adequate treatment to achieve compliance with permit limitations.

SPILL PLAN

The Department has determined that the Permittee stores a quantity of chemicals that have the potential to cause water pollution if accidentally released. The Department has the authority to require the Permittee to develop best management plans to prevent this accidental release under section 402(a)(1) of the Federal Water Pollution Control Act (FWPCA) and RCW 90.48.080.

The Permittee has developed a plan for preventing the accidental release of pollutants to state waters and for minimizing damages if such a spill occurs. This plan was recently updated and approved by Ecology. The proposed permit accepts this plan as current requires the Permittee to update this plan when necessary.

GENERAL CONDITIONS

General Conditions are based directly on state laws and regulations and have been standardized for all industrial waste discharge to POTW permits issued by the Department.

Condition G1 requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2 requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3 specifies conditions for modifying, suspending, or terminating the permit. Condition G4 requires the Permittee to apply to the Department prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5 requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G6 prohibits the Permittee from using the permit as a basis for violating any laws, statutes, or regulations. Conditions G7 and G8 relate to permit renewal and transfer. Condition G9 requires the Permittee to control production or wastewater discharge in order to maintain compliance with the permit. Condition G10 prohibits the reintroduction of removed pollutants into the effluent stream for discharge. Condition G11 describes the penalties for violating permit conditions.

PUBLIC NOTIFICATION OF NONCOMPLIANCE

A list of all industrial users which were in significant noncompliance with pretreatment standards or requirements during any of the previous four quarters may be annually published by the Department in a local newspaper. Accordingly, the Permittee is apprised that noncompliance with this permit may result in publication of the noncompliance.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics. The Department proposes that the permit be issued to expire on June 30, 2010

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on , in the *Aberdeen Daily World* to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) on in the *Aberdeen Daily World* to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-216-100). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (360) 407-6285, or by writing to the address listed above.

This permit was written by Gary Anderson P.E.

APPENDIX B--GLOSSARY

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the state. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD_5--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of the collection or treatment facility.

Categorical Pretreatment Standards--National pretreatment standards specifying quantities or concentrations of pollutants or pollutant properties which may be discharged to a POTW by existing or new industrial users in specific industrial subcategories.

Class 1 Inspection--A walk-through inspection of a facility that includes a visual inspection and some examination of facility records. It may also include a review of the facility's record of environmental compliance.

Class 2 Inspection--A walk-through inspection of a facility that includes the elements of a Class 1 Inspection plus sampling and testing of wastewaters. It may also include a review of the facility's record of environmental compliance.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Daily Maximum Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Engineering Report--A document, signed by a professional licensed engineer, which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Interference--A discharge which, alone or in conjunction with a discharge or discharges from other sources, either: (1) inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; or (2) therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal.

Local Limits--Specific prohibitions or limits on pollutants or pollutant parameters developed by a POTW.

Monthly Average--The average of the measured values obtained over a calendar month's time.

Pass-through--A discharge which exits the POTW into the waters of the state in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Significant Industrial User (SIU)--Industrial dischargers to a POTW that have effluent limitations defined in a category (40 CFR 403.6 and 40 CFR chapter I, subchapter N). However, the control authority may make a determination that even though an industrial user belongs to a category that has effluent limits for pretreatment, that industry is not a significant industrial because there is no reasonable potential for affecting the POTW's operation. A SIU may also be any other industrial user that: 1. discharges an average of 25,000 gallons per day or more of process water, 2. makes up more than 5 percent of the average hydraulic flow (dry weather) or 5 percent of the organic capacity of the plant, or 3. the control authority believes has a reasonable potential to adversely affect the POTW's operation.

Slug Discharge--Any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch discharge to the POTW. This may include any pollutant released at a flow rate which may cause interference with the POTW.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Coliform Bacteria--A microbiological test which detects and enumerates the total coliform group of bacteria in water samples.

Total Dissolved Solids--That portion of total solids in water or wastewater that passes through a specific filter.

Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C--TECHNICAL CALCULATIONS

Performance Limits for Flow

The spreadsheet in the Permit Writers Manual for calculating performance based limits from the EPA technical support document will not handle large numbers. In calculating flow limits for the Rohm and Haas plant, recourse must be made by hand calculations.

MAXIMUM DAILY LIMIT ($X_{.99}$)

$X_{..99} = \exp(\mu_y + 2.326\ \sigma_{y)}$

$\mu_y = 10.09603$

$\sigma_y = 0.222973$

$X_{0.99} = 40,727$ gpd

AVERAGE DAILY LIMIT ($X_{.95}$)

$X_{.95} = (X_n) + 1.645\ [V\ (X_n)]^{0.5}$

Where

$\mu_y = 9.550046$

$\sigma_y^2 = 0.209368$

n=30

and

$E(X_n) = \exp(\mu_y + 0.5\ \sigma_y^2)$

$V(X_n) = \exp\ [2\mu_y + \sigma_y^2][\exp(\sigma_y^2) - 1]\ /30$

$E(X_n) = \exp[9.550046 + .5(0.209368)] = 15,595$

$V(X_n) = \exp\ [2(9.550046) + 0.209368][\exp(0.209368) - 1]\ /30$

$= (243,215,879.5)(0.232899)/30$

$= 1,888,155$

$X_{.95} = 15,595 + 1.645\ (1,888,155)^{0.5} = 17,855$

M-PT	Parameter	Units	Type	Value	Dmr Date	LN Value	avg ln	stdev
BOD MASS LIMIT								
1	BOD, 5-DAY (20 DEG. C)	LBS/DAY	MXD	3	1-Jan-03	1.098612		
1	BOD, 5-DAY (20 DEG. C)	LBS/DAY	MXD	11	1-Feb-03	2.397895		
1	BOD, 5-DAY (20 DEG. C)	LBS/DAY	MXD	18	1-Mar-03	2.890372		
1	BOD, 5-DAY (20 DEG. C)	LBS/DAY	MXD	6	1-Apr-03	1.791759		
1	BOD, 5-DAY (20 DEG. C)	LBS/DAY	MXD	8	1-May-03	2.079442		
1	BOD, 5-DAY (20 DEG. C)	LBS/DAY	MXD	8	1-Jun-03	2.079442		
1	BOD, 5-DAY (20 DEG. C)	LBS/DAY	MXD	41	1-Jul-03	3.713572		
1	BOD, 5-DAY (20 DEG. C)	LBS/DAY	MXD	12	1-Aug-03	2.484907		
1	BOD, 5-DAY (20 DEG. C)	LBS/DAY	MXD	3	1-Sep-03	1.098612		
1	BOD, 5-DAY (20 DEG. C)	LBS/DAY	MXD	25	1-Oct-03	3.218876		
1	BOD, 5-DAY (20 DEG. C)	LBS/DAY	MXD	7	1-Nov-03	1.94591		
1	BOD, 5-DAY (20 DEG. C)	LBS/DAY	MXD	8	1-Dec-03	2.079442		
1	BOD, 5-DAY (20 DEG. C)	LBS/DAY	MXD	9	1-Jan-04	2.197225		
1	BOD, 5-DAY (20 DEG. C)	LBS/DAY	MXD	14	1-Feb-04	2.639057	2.265366	0.721102
COD MASS LIMIT								
1	COD (CHEMICAL OXYGEN DEMAND)	LBS/DAY	MXD	61	1-Jan-03	4.110874		
1	COD (CHEMICAL OXYGEN DEMAND)	LBS/DAY	MXD	17	1-Feb-03	2.833213		
1	COD (CHEMICAL OXYGEN DEMAND)	LBS/DAY	MXD	24	1-Mar-03	3.178054		
1	COD (CHEMICAL OXYGEN DEMAND)	LBS/DAY	MXD	24	1-Apr-03	3.178054		
1	COD (CHEMICAL OXYGEN DEMAND)	LBS/DAY	MXD	21	1-May-03	3.044522		
1	COD (CHEMICAL OXYGEN DEMAND)	LBS/DAY	MXD	45	1-Jun-03	3.806662		

M-PT	Parameter	Units	Type	Value	Dmr Date	LN Value	avg ln	stdev
1	COD (CHEMICAL OXYGEN DEMAND)	LBS/DAY	MXD	38	1-Jul-03	3.637586		
1	COD (CHEMICAL OXYGEN DEMAND)	LBS/DAY	MXD	24	1-Aug-03	3.178054		
1	COD (CHEMICAL OXYGEN DEMAND)	LBS/DAY	MXD	27	1-Sep-03	3.295837		
1	COD (CHEMICAL OXYGEN DEMAND)	LBS/DAY	MXD	34	1-Oct-03	3.526361		
1	COD (CHEMICAL OXYGEN DEMAND)	LBS/DAY	MXD	15	1-Nov-03	2.70805		
1	COD (CHEMICAL OXYGEN DEMAND)	LBS/DAY	MXD	50	1-Dec-03	3.912023		
1	COD (CHEMICAL OXYGEN DEMAND)	LBS/DAY	MXD	71	1-Jan-04	4.26268		
1	COD (CHEMICAL OXYGEN DEMAND)	LBS/DAY	MXD	50	1-Feb-04	3.912023	3.470285	0.482586
FLOW AVERAGE LIMIT								
1	FLOW	GPD	AVG	18112	1-Jan-03	9.80433		
1	FLOW	GPD	AVG	15945	1-Feb-03	9.676901		
1	FLOW	GPD	AVG	13343	1-Mar-03	9.498747		
1	FLOW	GPD	AVG	13660	1-Apr-03	9.522227		
1	FLOW	GPD	AVG	15295	1-May-03	9.635281		
1	FLOW	GPD	AVG	16515	1-Jun-03	9.712024		
1	FLOW	GPD	AVG	8946	1-Jul-03	9.098962		
1	FLOW	GPD	AVG	15309	1-Aug-03	9.636196		
1	FLOW	GPD	AVG	15563	1-Sep-03	9.652652		
1	FLOW	GPD	AVG	15762	1-Oct-03	9.665357		
1	FLOW	GPD	AVG	12084	1-Nov-03	9.399638		
1	FLOW	GPD	AVG	9248	1-Dec-03	9.132163		
1	FLOW	GPD	AVG	14420	1-Jan-04	9.576371		

M-PT	Parameter	Units	Type	Value	Dmr Date	LN Value	avg ln	stdev
1	FLOW	GPD	AVG	16152	1-Feb-04	9.689799	9.550046	0.209368

M-PT	Parameter	Units	Type	Value	Dmr Date	Ln Value	avg n	stdev
FLOW MAXIMUM LIMIT								
1	FLOW	GPD	MAX	27690	1-Jan-03	10.22883		
1	FLOW	GPD	MAX	23004	1-Feb-03	10.04342		
1	FLOW	GPD	MAX	22152	1-Mar-03	10.00568		
1	FLOW	GPD	MAX	26412	1-Apr-03	10.18157		
1	FLOW	GPD	MAX	26838	1-May-03	10.19757		
1	FLOW	GPD	MAX	22152	1-Jun-03	10.00568		
1	FLOW	GPD	MAX	20022	1-Jul-03	9.904587		
1	FLOW	GPD	MAX	21300	1-Aug-03	9.966462		
1	FLOW	GPD	MAX	20022	1-Sep-03	9.904587		
1	FLOW	GPD	MAX	41322	1-Oct-03	10.62915		
1	FLOW	GPD	MAX	19170	1-Nov-03	9.861102		
1	FLOW	GPD	MAX	18318	1-Dec-03	9.815639		
1	FLOW	GPD	MAX	29232	1-Jan-04	10.28302		
1	FLOW	GPD	MAX	30246	1-Feb-04	10.31712	10.09603	0.222973
OIL AND GREASE CONCENTRATION LIMITS								
1	OIL & GREASE	MG/L	AVG	6	1-Jan-03	1.791759		
1	OIL & GREASE	MG/L	AVG	12	1-Feb-03	2.484907		
1	OIL & GREASE	MG/L	AVG	4	1-Mar-03	1.386294		
1	OIL & GREASE	MG/L	AVG	9	1-Apr-03	2.197225		
1	OIL & GREASE	MG/L	AVG	0.1	1-May-03	-2.30259		
1	OIL & GREASE	MG/L	AVG	1	1-Jun-03	0		
1	OIL & GREASE	MG/L	AVG	6	1-Jul-03	1.791759		
1	OIL & GREASE	MG/L	AVG	4	1-Aug-03	1.386294		

M-PT	Parameter	Units	Type	Value	Dmr Date	LN Value	avg ln	stdev
1	OIL & GREASE	MG/L	AVG	2	1-Sep-03	0.693147		
1	OIL & GREASE	MG/L	AVG	11	1-Oct-03	2.397895		
1	OIL & GREASE	MG/L	AVG	7	1-Nov-03	1.94591		
1	OIL & GREASE	MG/L	AVG	14	1-Dec-03	2.639057		
1	OIL & GREASE	MG/L	AVG	0.1	1-Jan-04	-2.30259		
1	OIL & GREASE	MG/L	AVG	4	1-Feb-04	1.386294	1.106812	1.608241
TOTAL SUSPENDED SOLIDS, MASS LIMITS								
1	SOLIDS, TOTAL SUSPENDED	LBS/DAY	MXD	12	1-Jan-03	2.484907		
1	SOLIDS, TOTAL SUSPENDED	LBS/DAY	MXD	7	1-Feb-03	1.94591		
1	SOLIDS, TOTAL SUSPENDED	LBS/DAY	MXD	3	1-Mar-03	1.098612		
1	SOLIDS, TOTAL SUSPENDED	LBS/DAY	MXD	8	1-Apr-03	2.079442		
1	SOLIDS, TOTAL SUSPENDED	LBS/DAY	MXD	20	1-May-03	2.995732		
1	SOLIDS, TOTAL SUSPENDED	LBS/DAY	MXD	6	1-Jun-03	1.791759		
1	SOLIDS, TOTAL SUSPENDED	LBS/DAY	MXD	6	1-Jul-03	1.791759		
1	SOLIDS, TOTAL SUSPENDED	LBS/DAY	MXD	4	1-Aug-03	1.386294		
1	SOLIDS, TOTAL SUSPENDED	LBS/DAY	MXD	6	1-Sep-03	1.791759		
1	SOLIDS, TOTAL SUSPENDED	LBS/DAY	MXD	5	1-Oct-03	1.609438		
1	SOLIDS, TOTAL SUSPENDED	LBS/DAY	MXD	3	1-Nov-03	1.098612		
1	SOLIDS, TOTAL SUSPENDED	LBS/DAY	MXD	3	1-Dec-03	1.098612		
1	SOLIDS, TOTAL SUSPENDED	LBS/DAY	MXD	11	1-Jan-04	2.397895		
1	SOLIDS, TOTAL SUSPENDED	LBS/DAY	MXD	30	1-Feb-04	3.401197	1.926566	0.700483

Mass BOD Limit

PERFORMANCE-BASED EFFLUENT LIMITS
USE EXCEL TO PERFORM THE LOGNORMAL TRANSFORMATION
AND CALCULATE THE TRANSFORMED MEAN AND VARIANCE

LOGNORMAL TRANSFORMED MEAN =	2.2654
'LOGNORMAL TRANSFORMED VARIANCE =	0.7211
NUMBER OF SAMPLES/MONTH FOR COMPLIANCE MONITORING =	1
AUTOCORRELATION FACTOR(ne)(USE 0 IF UNKNOWN) =	0
E(X) =	13.8172
V(X) =	201.741
VARn	0.7211
MEANn=	2.2654
VAR(Xn)=	201.741
MAXIMUM DAILY EFFLUENT LIMIT =	69.446
AVERAGE MONTHLY EFFLUENT LIMIT =	38.949

Mass COD Limit

PERFORMANCE-BASED EFFLUENT LIMITS
USE EXCEL TO PERFORM THE LOGNORMAL TRANSFORMATION
AND CALCULATE THE TRANSFORMED MEAN AND VARIANCE

LOGNORMAL TRANSFORMED MEAN =	3.4703
'LOGNORMAL TRANSFORMED VARIANCE =	0.4826
NUMBER OF SAMPLES/MONTH FOR COMPLIANCE MONITORING =	1
AUTOCORRELATION FACTOR(ne)(USE 0 IF UNKNOWN) =	0
E(X) =	40.9183
V(X) =	1038.505
VARn	0.4826
MEANn=	3.4703
VAR(Xn)=	1038.505
MAXIMUM DAILY EFFLUENT LIMIT =	161.761
AVERAGE MONTHLY EFFLUENT LIMIT =	100.790

TSS Limit

PERFORMANCE-BASED EFFLUENT LIMITS
USE EXCEL TO PERFORM THE LOGNORMAL TRANSFORMATION
AND CALCULATE THE TRANSFORMED MEAN AND VARIANCE

LOGNORMAL TRANSFORMED MEAN =	1.9266
'LOGNORMAL TRANSFORMED VARIANCE =	0.7005
NUMBER OF SAMPLES/MONTH FOR COMPLIANCE MONITORING =	1
AUTOCORRELATION FACTOR(ne)(USE 0 IF UNKNOWN) =	0
E(X) =	9.7455
V(X) =	96.374
VARn	0.7005
MEANn=	1.9266
VAR(Xn)=	96.374
MAXIMUM DAILY EFFLUENT LIMIT =	48.101
AVERAGE MONTHLY EFFLUENT LIMIT =	27.204

Oil & Grease Concentration

PERFORMANCE-BASED EFFLUENT LIMITS
USE EXCEL TO PERFORM THE LOGNORMAL TRANSFORMATION
AND CALCULATE THE TRANSFORMED MEAN AND VARIANCE

LOGNORMAL TRANSFORMED MEAN =	1.1068
'LOGNORMAL TRANSFORMED VARIANCE =	1.6082
NUMBER OF SAMPLES/MONTH FOR COMPLIANCE MONITORING =	1
AUTOCORRELATION FACTOR(ne)(USE 0 IF UNKNOWN) =	0
E(X) =	6.7594
V(X) =	182.484
VARn	1.6082
MEANn=	1.1068
VAR(Xn)=	182.484
MAXIMUM DAILY EFFLUENT LIMIT =	57.775
AVERAGE MONTHLY EFFLUENT LIMIT =	24.360

Date	BOD	Boron	COD	O & G	TSS
1/1/2003	19	39	394	6	79
2/1/2003	111	26	207	12	113
3/1/2003	166	17	218	4	28
4/1/2003	92	0.51	192	9	67
5/1/2003	36	0.48	215	7	93
6/1/2003	62	0.05	382	1	50
7/1/2003	486	0.78	695	6	310
8/1/2003	94	0.05	280	4	34
9/1/2003	30	0.09	185	2	42
10/1/2003	140	8.88	212	11	79
11/1/2003	80	4.67	160	7	34
12/1/2003	152	6.31	757	14	64
1/1/2004	120	9.3	452	4	67
	122.153	8.70153	334.538	6.69230	81.5384
AVG	8	8	5	8	6

APPENDIX D - RESPONSE TO COMMENTS

Comment 1

If samples are taken on the 1st of the month, it is difficult to process them and make the deadline of the 15th of the month.

Response 1

There is nothing in the permit that requires samples to be taken on the first of the month. Rohm and Haas may take samples as early in the month as needed to meet the 15th deadline in the following month.

Comment 2

What is the reason for having average monthly and maximum daily samples when sampling is monthly?

Response 2

Normally, there is no reason to have both average monthly and daily maximum when the sampling is done monthly. There is nothing, however, that prevents the permittee from sampling more often than monthly. In this case an average and a maximum daily limit are required. The example of a last of the month sample exceeding the monthly average has lead some permittees to take a second sample to bring down their average. This is perfectly legal.

Comment 3

Establishing the limits based on current performance restricts Rohm and Haas to the current production procedure (recycled process water for process feed), and unduly restricts them in the circumstance that product quality should suffer. If product quality should suffer, Rohm and Haas would be forced to cease recycling of process effluent and treat or otherwise dispose of the recycled process water.

Response 3

A comparison of limits for two one year periods, January 1, 2002 through January 1, 2003 for municipal water supply and January 1, 2003 through January 1 2004 is shown in the following table. From January 2002 until January 1, 2003 the combined wastestreams were processed through an evaporator before discharge. Since January 1, 2003 the evaporator has been shut down and the wastestream recycled. These derived limits use the standard Ecology method of computing performance limits.

Period/Parameter	COD Avg.	COD Max.	TSS Avg.	TSS Max.	O&G Avg.	O&G Max
01/01/02-01/01/03	275 lbs. per day.	460 lbs. per day	24 lbs.per day	41lbs.per day	38 mg/L	67 mg/L
01/01/03-01/01/04	97 bs.per day	157 lbs.per day	27 lbs.per day	48lbs.per day	24 mg/L	58 mg/L

This is an interesting comparison, and, as Rohm and Haas asserts, the difference in limits is remarkable. The significant difference is in COD. A summary of the actual performance for COD is shown in the following table:

Month	COD 2002, lbs per day	COD 2003, lbs per day
January	75	61
February	54	17
March	85	24
April	221	24
May	126	21
June	176	45
July	54	38
August	110	24
September	77	27
October	89	34
November	39	15
December	28	50
January	61	71

The recycled process wastewater comes from six sources:

- Boric acid
- Boiler blowdown
- Equipment washdown
- Trimethoxyborine formulation
- Sodium Borohydrate process
- Methanol recovery

The problem contaminant in this effluent is methanol which is measured as chemical oxygen demand. From the information shown in the permit application, the source of this methanol would seem to be the A2 bottoms (methanol distillation/purification). If this wastestream were discharged directly, it would not go out as product, but would be wasted to the POTW.

If Rohm and Haas should cease to recycle their wastewater to the process, the effluent would be from a unique new situation. The permittee has never operated with the evaporator off and with no recycling simultaneously. Since this situation is unique, no performance related limits are possible.

As a result, the limits set in the permit modification of November 27, 2002 are retained. The permit will be resent to public notice.

Comment 4

During periods of extreme rainfall the present system of containing and recycling storm water from the process area can threaten the containment pond dike and it may become necessary to discharge storm water to the waters of the state. If product quality suffers, storm water may need to be discharged to the waters of the state without treatment. Can this be done without restriction?

Response 4:

Given that Rohm and Haas is currently regulated under the general storm water permit, and that no significantly toxic substances are used in the chemical process, discharge of storm water to the waters of the state is permissible provide that the limitations of the General Stormwater Permit are met.

Comment 5:

Rohm and Haas would like to explore the possibility of disposing of boiler blowdown to ground.

Response 5:

Disposal of boiler blowdown, which is by definition process wastewater, cannot be covered under the stormwater permit. As process wastewater, it is cannot be disposed of to saturated ground, which eliminates disposal ground to the dry months of the year. Disposal to ground requires the construction of at least three monitoring wells and a testing program that normally involves quarterly sampling for about forty four parameters, semi-annual sampling for an additional fourteen parameters and annual testing for another 9 parameters. In short, disposal to the ground is usually a matter for large food processors and municipalities. No provision for disposal to ground will be made.